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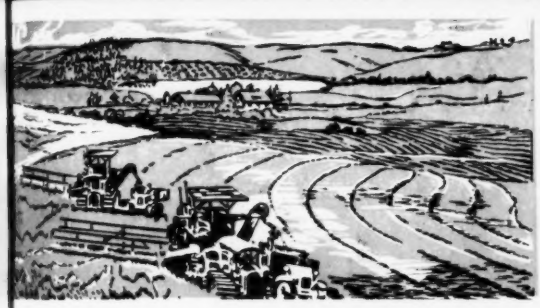

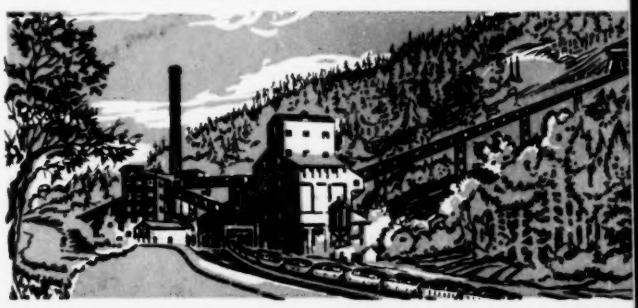

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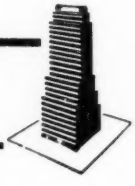

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The article by Miss Smith was prepared during her junior year at Wellesley College. Miss Smith is now with Parke, Davis and Company in Detroit, Michigan.

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VOLUME LIII OCTOBER 1954 NUMBER 7

HAITI

A Brief Survey of its Past and Present Agricultural Problems

ELMIRE M. LOBECK
Englewood, New Jersey

Haiti is a land of contrast and conflict. It is a land of drought and a land of floods where rivers are raging torrents one day and dry boulder-strewn gullies the next; where cactus covered hills are separated from one another by undrained marshlands. It is a land of high, rugged mountains and low level plains separated by sheer cliffs rising a thousand feet. It is a contrast of cities such as Port-au-Prince, the capital, with its large central Champ-de-Mars criss-crossed with broad avenues and overlooked by the glittering white of the National Palace; a contrast of this and other smaller cities with rural villages of not more than a dozen rude huts. It is a land of poverty for the many and wealth for the few where a largely illiterate peasant society wages a constant battle with the all too tired land from which it ekes a meager existence.

On January the first, 1804, Jean-Jacques Dessalines proclaimed the independence of the former French colony of Saint-Domingue. The new republic which the slaves and the free "gens de couleur" had wrested from its French overlords became the first independent Negro state in the world and the second independent nation in the western hemisphere. The new country was called Haiti, a former Indian name which meant "mountainous."

During its 150 years of independence Haiti has been maligned, misinterpreted, and in general unknown to the rest of the western world. With its mixed French-African heritage it is somewhat of an oddity in a region where Spanish culture predominates. The veil of mystery might have been lifted with the overrunning of the country by the American Marines in 1915. But those who wrote about Haiti during the period of the American Occupation only deepened the mystery with weird tales of voodoo magic which

they heard in Port-au-Prince. Few saw the country with a sympathetic eye and fewer reported on its real condition.

The Republic of Haiti occupies the western third of the second largest island of the West Indies, named by Columbus, Hispaniola. The area of the republic, including its four dependent islands, is estimated to be about 10,700 square miles. Of this over 8,000 square miles are mountainous, the highest peak being Morne La Selle which rises 8,790 feet above sea level.

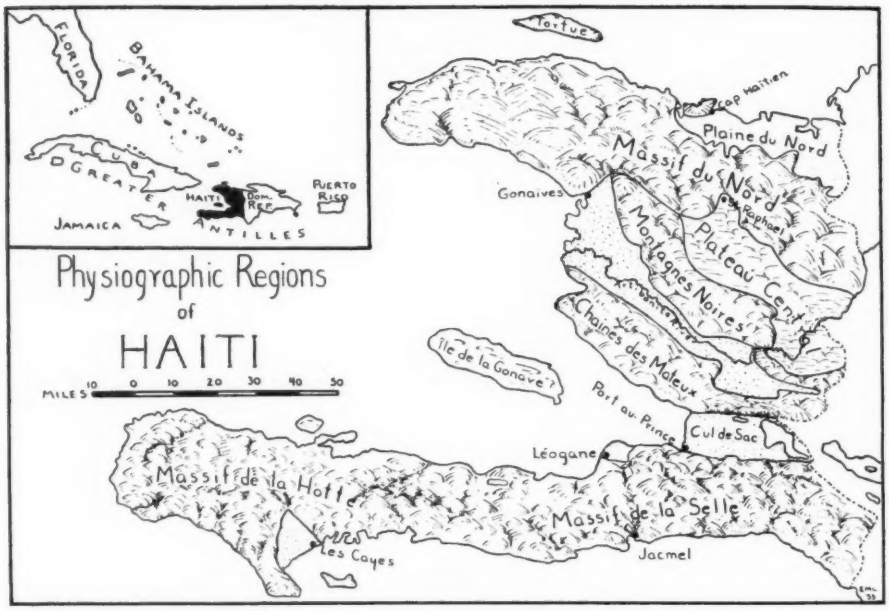

FIG. 1. Map showing the larger physiographic regions of Haiti (Based upon Woodring's Physiographic Provinces of the Republic of Haiti).

The mountains can be grouped into four distinct topographic barriers, altho geologically they may be divided into many separate ranges (Fig. 1). In the north the Massif du Nord occupies the northeastern part of the country and stretches out to the west far into the northwest peninsula. The rugged pine clad peaks of the east gradually give way to more gentle slopes and finally to high flat topped plateau surfaces.

The Montagnes Noires, lower and less rugged, are separated from the first complex of ranges by the narrow gorge of the Ennery River northeast of the City of Gonaïves. This range follows the same configuration, curving to the southeast and straightening out into

an east-west direction. The third group of ranges, comprised of the Chaines des Mateux and the Montagnes du Trou d'Eau also curve to the southeast, joining the second at the Dominican border.

The fourth system of mountains runs almost due east and west and forms the southern peninsula of Haiti. Several spurs jutting to the south cause this coastline to be quite irregular. This chain formed of the Massif de la Selle in the east and the Massif de la Hotte in the west contains the highest and the most inaccessible mountains of the republic.

These mountain ranges from colonial times to the present have formed effective barriers restricting trade and communications between the larger centers which are invariably in the plains. The Plain du Nord, on the north coast, which was the heart of the French colony, is effectively hemmed in by the Massif du Nord which borders it to the south and west. The Plateau Central, the largest expanse of relatively level land in the country (approximately 850 square miles) is bounded on the north and northeast by the southern slopes of this same range, and to the west and south by the Montagnes Noires. The Chaine des Mateux and the Montagnes du Trou d'Eau separate the Plain and the Valley of the Artibonite, the largest river in Haiti, from the plain of the Cul de Sac. The Massif de la Selle rises abruptly from the Cul de Sac on the south separating it from the smaller plains of the southern peninsula, the largest being that of Cayes.

Situated in the tropics, the temperature of Haiti varies little thruout the year, the differences from one part of the country to another being directly related to elevation. Thruout the country there are two rainy seasons during which the greater amount of precipitation occurs. These are in the spring and fall, the winter being dry in most parts and the summer showing a drop between the spring and fall maxima. This regime is slightly different along the north coast where the persistent drizzle of the "Nords" is in evidence much of the winter and in contrast to the sudden downpours which bring rain to the rest of the country. In only the highest mountains is the rainfall over 100 inches per year and in much of the low lying land it is less than 50 inches. This coupled with the relatively high temperatures results in an arid to semi-arid environment thruout much of the country.

During the dry seasons water is at a premium and each drop must be used to the utmost. Every stagnant pond or puddle, every

FIG. 2. Every pond is the scene of considerable activity.

irrigation ditch is the scene of considerable activity. Women gather to do the family wash along the edge while splashing around them others bathe and children play. Now and then someone stoops to fill a calabash for drinking or cooking. In the shallower part several pigs, escaping the heat of the day, rest with only their eyes and noses above the surface. If the pond is beside the road it will be a resting point where women and their dust-covered donkeys pause on their way to and from market. It is no wonder that disease is widespread under such conditions.

Haiti was discovered by Columbus on December 6, 1492 and became the site of the first white settlement in the new world. Altho the actual fate of the small group which Columbus left behind is not known, it is presumed that they came to blows with the Indians who massacred them, a bloody beginning which was to be repeated on a much larger scale at a later date when the African slaves revolted and drove their white overlords from the land once and for all.

Settled by the French during the 17th and 18th centuries and peopled in the main by African slaves who were brought in to man the indigo and sugar plantations, Saint-Domingue soon became the most valuable colonial possession in the New World. But life

was not easy. Sparcity of level land for agriculture, difficulties of transportation and communication thru the rugged mountain areas and the uncertainty of a water supply, constant in a semi-arid environment, are problems which have been cured neither by revolution nor the passage of time.

The wealth of the French colony was built up with slave labor as the basis of production and the good favor of the French Crown as the basis of land ownership. The rich planters were the envy of all France for the wealth which their slaves made possible enabled them to have large and stately homes in the French capital where they spent a part of each year to relieve the monotony of colonial life. In Saint-Domingue they built cities modeled after those at home. They constructed irrigation systems and dug deep wells so that even in the dry periods the land was green with cultivated crops. But even in this, the wealthiest of colonies, there was poverty which history has for the most part overlooked. Not only the poverty of the blacks who had been uprooted from Africa to work in the fields and later given their liberty, as many of them were; but there were poor white too, some of whom had never seen wealth and others who had lost everything either thru the disfavor of the government or thru the vagaries of the Haitian climate. And from this poverty grew discontent which spread from the whites to the free Negroes and then to the slaves. The conflict grew into open rebellion and after several years of struggle with all the odds against him, the Haitian slave found himself independent and the "affranchi" found himself out from under the yoke of France.

But the conflict did not end. To the former slave the cane field was a sign of bondage and he refused to grow sugar, to perpetuate the plantation system. The country was at this time divided. In the north under the Negro, Christophe, an attempt was made to keep the large plantations intact and an attempt was made to continue production by force. In the south the mulatto president, Petion, realizing the desire for freedom and independence, divided up the land into small holdings and portioned them out to the former slaves. Small subsistance farms took the place of larger holdings. After Christophe's death, when the country became united, the north, too, was forced to turn to small scale farming with the result that output fell at an alarming rate, sugar virtually disappeared and the production of the country switched to those crops which could be grown with a minimum of cultivation. Coffee predominated

Fig. 3. Rethatching roof in the town of Cerca-la-Source at the eastern end of the Central Plateau. Roofs in this locality are made of palm fronds. The wooden framework of the house can be seen where the mud wall has peeled off. Cactus hedges are frequently used to restrict the movement of animals and poultry.

as the export crop and the forests of mahogany and other valuable hardwoods were cut down ruthlessly.

The wealth of Haiti is a thing of the past. Today the descendants of the former slaves till their little patches of land in much the same manner as did their ancestors. Of the 3,111,973 people reported in Haiti's first modern census (1950) approximately 90 per cent are farmers. Within an estimated area of 10,700 square miles there are but ten cities with a population of over 5000 persons and these with but one exception are directly on the coast despite the fact that little of Haiti's income is derived from the sea. Slightly over 12 per cent of the people live in towns of 500 persons or more showing that the distribution is most rural in character. Density varies with the condition of the land, being the heaviest in the well-watered

coastal lowlands and thinnest in regions where irrigation water is unobtainable or where rugged topography or barren rock excludes cultivation of even the most primitive type. Despite these limitations it is next to impossible when traveling thru the country, whether it be on highways or mountain trails, to get out of sight of human habitation so dense is the population.

Tho occasional isolated dwellings dot the hillsides most of the peasants live in small villages of half a dozen to fifty thatch-roofed "cailles." These are built of bamboo or small branches tied or woven onto a framework of posts which supports the mud walls. The two or three windows are kept tightly closed with heavy wooden shutters most of the time. The floors are generally of packed dirt slightly higher than the ground outside. The thatch is made of guinea grass, palm fronds, or sugar cane tops depending on the locale. Most of the houses are whitewashed and those of the more prosperous peasants have gaily painted shutters and doors and occasionally designs on the walls themselves.

The Haitian peasant, despite his lack of schooling, is intelligent and hardworking but like farmers thruout the world set in his ways. The land he farms is often so eroded and rocky that only the hardiest plants are able to push their roots down thru the loose rocks to the unfertile soil. Sometimes he is forced to cultivate a hillside so steep that he must tie a rope around his waist to avoid slipping as he puts in the seed or gathers his meagre harvest. Water must often be sought at great distances and brought to the home after a long and difficult uphill climb.

Most of the peasants own some or all of the land which they cultivate. However the farms are small, the majority being between one and three acres, which area is frequently broken up into several plots a mile or more distant from one other. Altho commercial crops differ from one area to another, the subsistance farms are remarkably similar thruout the country. Intercropping is almost universally practiced so that to the casual observer a garden plot has a most hodge-podge and uncared-for appearance. Peas, beans, petit-mil, a kind of sorghum, corn, root crops, vegetables, a cotton tree or two, and a bit of sugar cane can be seen growing side by side. But a carefully planned planting schedule during the rainy season insures that as one crop is harvested another is coming into maturity to take its place.

Almost every farmer grows some commercial crop. In the

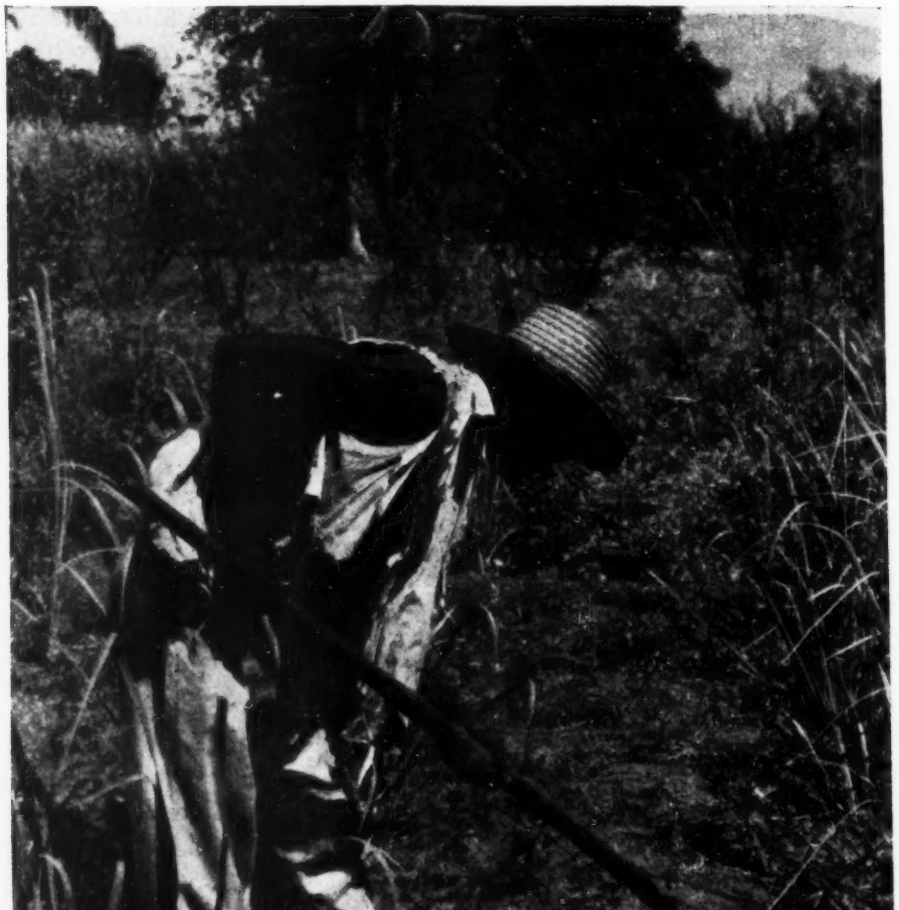

FIG. 4. This farmer in the Cul de Sac is digging sweet potatoes with a hoe, the only agricultural implement of many peasants. As the foliage of the potatoes disappears sugar cane takes its place in the crop rotation. Behind the farmer are bushes of "pois-congo." The trees are coconut palms and mangoes. Ragged work clothes are not a sign of absolute poverty. One just does not dress up to work in the fields.

mountains this is generally coffee, which is and has been for years the leading export of Haiti accounting for between 32 and 71 per cent of the total value of exports during the last twenty years. Because it is a peasant crop, control of the quality is difficult but because of its importance in the nation's economy, extremely necessary. Formerly the peasant allowed the coffee bushes to stand until they no longer were producing, counting on fallen berries to replenish the stand. After the berries were picked they were spread on the ground to dry in the sun, little care being taken to eliminate the green ones or to see that all were evenly dried. Then berries, dirt, and all were raked up and carried to the nearest market and sold to a coffee "speculator" who in turn sold larger batches to other speculators. Gradually the coffee found its way to the nearest city where it again might change hands several times before reaching the exporter.

Thru the efforts of the government, aided and abetted by the local agronomists, the Haitian equivalent of county agents in the United States, the peasant is learning the advantages of producing a crop of higher and more even quality. He has been instructed in the building and use of cement platforms called "glacis" on which the berries are dried without coming in contact with the ground. On the many experimental farms thruout the country there are nurseries which supply small coffee plants, assuring that the new growth will be of a high producing type. He is encouraged to remove old bushes as their production falls rather than waiting for it to cease altogether. Many peasants have started nurseries of their own so that they have a constant supply of new plants.

In the coastal lowlands where rainfall or irrigation permit, sugar is the commercial crop. It is more important in the economy than its third or fourth place among exports would indicate for much of it is used locally. Unlike coffee, sugar is grown by both small and large scale producers, the largest being the Haitian American Sugar Company. This company owns and leases land in the Cul de Sac and Léogane plain and also buys cane from smaller producers in the same regions. The cane after being cut by hand and stripped of the leaves is loaded on ox carts and taken to weighing stations. There it is loaded on flat cars of a narrow gauge railway and shipped to the refinery in Port-au-Prince. A second refinery making brown sugar is located near Cap Haitien. A third built with

Cuban capital was completed during the winter of 1952 near Les Cayes. Most of the peasant grown cane, however, is crushed in small mills where the syrup is extracted by rather primitive and not too efficient methods. The syrup is then boiled until it is quite thick and poured into molds to cool. The resulting dark brown sugar, "rapadou" is sold in rural markets thruout the country.

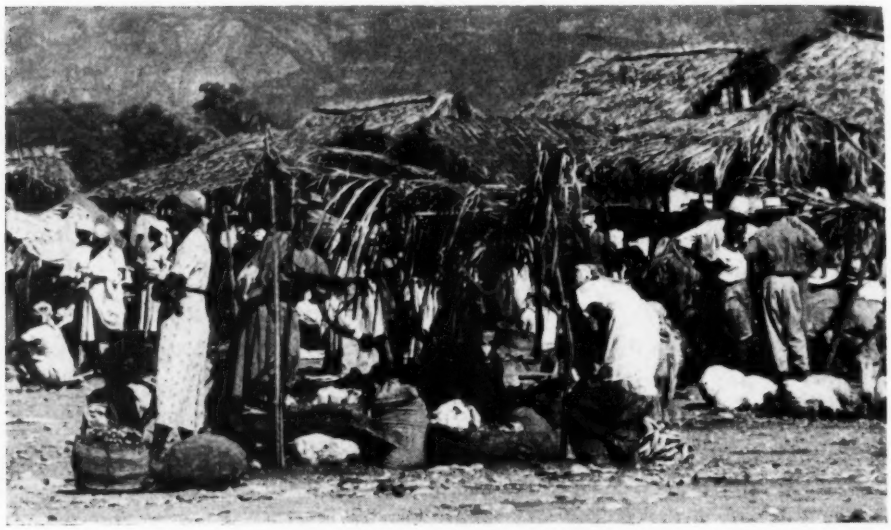

FIG. 5. Market day at Croix-des-Bouquets.

Other of the syrup is put thru a fermentation process to produce clairin or tafia, a cane-juice rum.

Surprisingly enough, cane is not confined to the well-watered lowlands but can be seen growing in small patches on hillsides thruout the country, even in the driest regions. It is able to withstand the dry season better than many crops and altho it does not produce as much juice there is a higher concentration of sugar in it.

A second crop of the well watered regions is bananas, both the type familiar in the United States and known in Haiti as the "figue-banane" and the plantain which must be cooked before it is eaten. The plantain is one of the mainstays of the Haitian diet and is eaten boiled, fried, and in soups. The exports of bananas first became important in 1931-32 when the export value was nearly $7000. The peak was reached in 1946-47 when over 6 million dollars worth were exported. Since that time production has steadily declined due both to plant diseases and to the withdrawal of the Standard Fruit

Company from Haiti. A government agency, Habanex, has recently been established to reorganize the export of bananas and to stimulate their production in all suitable areas.

Rice is one of the staple foods of Haiti. Altho production has increased greatly in the last few years it has not caught up with consumption. Three rice producing areas stand out altho rice is grown thruout the country where conditions permit.

The largest area of rice production is in the Artibonite Plain, in low-lying areas which are periodically flooded by the Estère River and in areas irrigated by the Artibonite itself. Along the northern coast of the southern peninsula between Port-au-Prince and Léogane much low land which was overgrown with mangroves is being cleared and diked and planted to rice. At St. Raphael in the northeastern corner of the Central Plateau the production of rice was made possible with the completion of a dam and irrigation canals initiated by the U.S. Point IV Program. Since rice was an entirely new crop to these areas it was difficult to introduce its cultivation for the farmers thought that the region was too cold. Once a single crop was harvested and sold, however, the farmers were eager to make the change.

Realizing that the diet of many Haitians is low in proteins and knowing the success which other rice-growing countries have had breeding fish in the rice paddies, a United Nations fish expert was brought in to undertake a similar project in Haiti. Large breeding ponds were excavated on the campus of the Agricultural College at Damien, just outside of Port-au-Prince. Thru experiments it was determined that carp and tilapia, an African fish brought in by way of Java and Jamaica, were the most satisfactory species. Not only do the fish supply a much needed source of food but by constantly stirring up the mud in the paddies they bring about an increase in rice production. The fish also eat the mosquito larvae which thrive in the standing water, thus reducing the dangers of malaria in these regions.

In the drier parts of the country sisal is an important commercial crop. Like sugar, it is grown by both small and large scale producers, the largest being the American owned Plantation Dauphin near Fort-Liberté which annually exports in the neighborhood of 6 million dollars worth of carefully graded fiber. Since 1947 sisal has ranked second in value of exports. The small scale peasant producer decorticates his sisal in a primitive manner which produces an in-

ferior fiber, dull green in color. This he twists by hand into ropes of varying degrees of coarseness and sells in the local market.

The market is one of the most important institutions in Haiti, both economically and socially. Most of the goods are brought to market by the women, the "marchandes," altho live animals, other than poultry, are often sold by the men. The largest rural market in the country is that which convenes at Croix-des-Bouquets in the Cul de Sac every Friday. Sometimes as many as five thousand

Fig. 6. In the markets some marchandes have small shelters or wooden frames for their goods while others spread out their displays on the ground. (Croix-des-Bouquets)

people gather there to buy and sell and collect the latest news and gossip. Altho other rural markets are smaller, all are remarkably similar in general outlay and in goods for sale. As a general rule those marchandes with similar items for sale are grouped together so that in certain definite areas of the market one finds vegetables, grains, flour, fruits, meat, pottery, baskets, rope, shoes and sandals, hats, cotton yardgoods and ready-made clothing, pots and pans, charcoal, bread, cakes, candy, or various hot foods which can be eaten on the spot. At most of the larger markets there is a tin-smith who repairs pails and basins and makes all manner of utensils including coffee pots, cups, and plates from sheet metal and old tin cans.

Some of the marchandes with large displays of imported glassware, dishes, soaps, and notions of all kinds, others with yardgoods, and those who are wholesalers travel constantly from one market to another by camion, a cross between a bus and truck. These cumbersome vehicles, piled high with produce, and filled to overflowing with people, provide regular, tho frequently delayed service between all the larger towns.

The great majority of marchandes, however, travel once a week to the market nearest their homes. Some come on foot, balancing great baskets on their heads; other jog along the road, sitting side-saddle fashion on their heavily laden little donkeys. To an outsider the arduous journey hardly seems worth while for much of the profit from the sale of a few chickens or a sack of vegetables is spent for market taxes or on food along the way.

Haiti is and must remain a predominantly agricultural country. There are few resources for industry; no fuel with the exception of some rather poor lignite deposits near Maissade in the Central Plateau; no developed water power. In former times the government focused nearly all of its attention upon improving and increasing the production of crops for export. Attention is now being focused upon production for local consumption as well. In this the Haitian government has been aided by teams of technicians provided by the United States Point IV Program and by the United Nations; experts in agriculture, animal husbandry, forestry, fisheries, as well as health, education, and finance.

One of the most notable advances has been made in irrigation which plays an important part in crop production because most of the level plains of Haiti have a semi-arid climate. During colonial times the French built extensive canal systems, many of which are still in use. However, these are inadequate for present needs and much attention has recently been given to increasing the water supply to the farmer thru the building of dams and the extension of existing canals. In this the Point IV Program has played an important part and thanks to the irrigation projects in St. Raphael, Fond Parisien, and the Plain of Cayes much land which in former times could be cropped only during the rainy season is now in constant production.

The largest irrigation scheme is the Artibonite Valley Project which has long been dreamed of and which is at last becoming a reality. The Artibonite is by far the largest river in Haiti. After

crossing the southeastern corner of the Central Plateau it flows thru a deep and narrow gorge, Peligre Canyon, before entering its wide flood plain. In the past the Artibonite has flowed unchecked. flooding great areas during the rainy season, destroying crops, men, and animals. Because in normal times it flows in a deeply entrenched channel its waters are difficult to use for irrigation without costly pumping apparatus. The new dam which will be 190 feet high and built in Peligre Canyon will form a reservoir to be used for flood control and to supply a constant flow of water during the dry season. The dam project also includes extensive canal systems which will bring under irrigation an estimated 83,000 acres, much of it hitherto uncultivated.

Extensive educational programs are being conducted simultaneously with the building so that by the time water is available the farmer will know how to get maximum benefit from it. The Point IV experimental farm at Bois DeHors in the Artibonite Plain has for several years been experimenting with various crops which can be cultivated with the increased water supply.

The government is doing much to foster Haiti's vast development program. On October 1, 1951, a five-year plan was initiated providing for the expenditure of $40 million on agriculture, education, health, and public works of various types. Thruout the country roads are being widened, graded, and surfaced. Cities which have been without electricity are getting new electric plants; those without water are being provided with a safe and dependable supply. Docks and harbors are being improved to facilitate both the coastal and export trade.

There is still an enormous job to be done, one whose magnitude might well stagger a less determined people. Haiti's first 150 years were marred by internal strife, poverty, and a deterioration of her natural resources. With a continued intelligent approach to her problems which solicit the support and understanding of all her people, Haiti's future should be marked by unity of purpose, drawing greater wealth from the increasing production of a long-neglected and ill-used land.

VANDALISM AND ABUSE IN NATIONAL PARKS AND MONUMENTS

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National Parks and Monuments have been set aside to protect natural and historical wonders of our country—part of our national heritage. When people enjoy these wonders without impairing them for future generations everyone benefits. Unfortunately some people are carelessly or deliberately destructive—this is vandalism and abuse.

Vandalism is a state of mind, a sense of conduct or spirit which induces a person to destroy or deface an object of beauty or use. Vandalism is the ultimate in abuse and may arise under conditions of misunderstanding, ignorance or just plain hostility. Malicious, premeditated vandalism cannot be controlled completely, but careless destruction and misuse of park areas and facilities must be dealt with effectively.

Are you a vandal? According to statistics the people who cause the most wanton destruction are high school and college age boys who are out for mischief, and very young children who do not stop to realize what they are doing. Tourists of all ages commit many acts of carelessness. Souvenir hunters are among our greatest menaces. Thoughtless people are appalling in their conduct in areas provided by the federal government for relaxation and enjoyment.

TYPES OF DAMAGE

In this day and age more people have more leisure time to spend in parks. Many have come to regard the National Parks as resorts for their own particular enjoyment. Take, for example, Yosemite National Park, California. The Yosemite Valley has been called the most beautiful place in the world. Apparently a great many people agree for every summer almost a million people crowd and trample an area of four or five square miles. Crowds of this size in so small an area can and do cause costly deterioration. The authorities have even reached a state where they are attempting to discourage repeaters, but one cannot tell families from California that they haven't as much right to visit Yosemite as tourists who have come

all the way from Massachusetts. So the crowds increase, with many people returning again and again.[1]

Overuse, of course, increases the danger of carelessness and vandalism, but crowded or not, there are thoughtless people everywhere. Stolen light bulbs and fireplace grills continually have to be replaced. Theft of binoculars on observation platforms is common. Shockingly enough campers will stoop so low as to burn benches and tables even when a plentiful supply of firewood is available.

Equally costly is the damage done to signs and the cost of replacing stolen ones—not only costly in money and labor, but also dangerous for people frequenting the area. Theft of signs for souvenirs increases driving hazards; hikers become lost and rescue is expensive.

Trash is an unpleasant sight. Careless picnickers leave unsightly remains of their lunches when they have finished eating. The tourist-photographer unthinkingly drops his film carton wherever he happens to load his camera. Boys, little and big, delight in tossing coke bottles onto rocks in streams with no thought that some unsuspecting wader might be seriously injured. Thus it is obvious why the cost of park maintenance is high. Litter must be removed. For Mount Rainier National Park, Washington, it was estimated in 1950 that it cost $150 a week to pick up paper, bottles, paper plates, tin cans, etc. These articles were found in toilets and on the grounds, in parking areas and lodged in brush along roadways. To clean the area took ten men and four vehicles one entire day.[2]

Many of the National Parks have carefully prepared exhibits for the pleasure and education of visitors. Some inconsiderate people have no thought for the work and expense which is put into these exhibits. Damage, theft and destruction are widespread. At Grand Canyon National Park, Arizona, an exhibit on the Colorado River Trailside had its huge glass cover smashed, the materials destroyed or stolen. This plate glass had been carried down a difficult trail by mules.

Rocks and ruins beside the trail suffer from tourists just as much as exhibits. Fingers poke and pry loose pieces of ancient adobe. Indian ruins in Walnut Canyon National Monument, Ari-

[1] Martin Litton, "Yosemite's Beauty Fast Disappearing," *Los Angeles Times*, September 1, 1952.

[2] John C. Preston, "No Bag Limit—on Trash—at Mount Rainier National Park," *Parks and Recreation*, July 1951.

zona, have been damaged beyond repair by vandals. Or people walk off with a piece of petrified wood, a piece of stalactite, or a chip from an interesting rock formation. On Newspaper Rock at Petrified Forest National Monument, Arizona, visitors have left initials, dates and pictures. These carvings are slowly ruining the prehistoric Indian pictures painted there by extinct tribesmen.[3]

Vandalism is destroying the beauty of the famous geysers in Yellowstone National Park. Throwing of rocks and trash into hot springs is of such volume that it impedes or blocks off the flow of water. Most of this debris can never be removed. Handkerchief Pool has been completely destroyed. Forced eruption of Morning Glory Pool yielded 110 different types of objects. These included enough tax tokens to fill a five pound jar, $97.34 in coins, wearing apparel, two Ingersoll watches, pocket knives and combs, whistles and sunglasses, bottles and cans, logs and rocks.[4]

Not only do some vacationers take advantage of unguarded natural formations and archaeological ruins, but they also damage plants. They dig up trees and shrubs, strip off birch bark as potential writing paper, or drive spikes into trees. Hatchet marks have been observed where there is no reason for them to be. Rare plants have been damaged at Hawaii National Park.

A particular problem affecting many areas is that of illegal hunting. The population of deer in Acadia, Maine, bears in the Great Smokey's of North Carolina and Tennessee and antelope in Wind Cave National Park, South Dakota, are being decreassed by shooting, and all because there are not enough ranger patrols. Poachers in Glacier Bay National Monument, Alaska, are believed to be taking hair seals, mountain goats and deer in enough quantity to deplete their numbers. In Everglades National Park, Florida, airplanes are being used from which gunners shoot birds.[5]

By far the most destructive carelessness for which a human being can be responsible is fire. The National Park Service in 1952 reported 450 fires of which fifty-six per cent were man caused and the rest started by lightning. A camper in a hurry to get away fails to make sure his fire is thoroly out, or a vacationer absent-mindedly

[3] Devereux Butcher, "Your Secretary Visits Arizona Areas," *National Parks Magazine*, October-December 1947.

[4] George Marler, "Trouble in the Geyser Basins," *National Parks Magazine*, July-September 1949.

[5] Devereux Butcher, "Harassed Wildlife," *National Parks Magazine*, Advanced Printing, April-June 1947.

flips a cigarette out the window of a car. The result—fires sweep over forests destroying large trees, killing wildlife, disfiguring beauty and ruining forest playgrounds. A forest fire is detrimental to every fisherman, camper, tourist, health seeker, hiker, hunter and vacationer, or whoever sets foot in a forest. Everyone should be responsible for his own conduct in the woods, especially his handling of fire.[6]

Most of the Washingtonia palms in the 49 Palms Oasis in Joshua Tree National Monument, California, were burned by two teenage boys. To quote from a publication of the U. S. Department of the Interior:

> Two-thirds of the oasis was burned out, forty-four large palms were destroyed. Eighteen small palms and four cottonwood trees were partially burned. The fire covered an acre in extent, leaving one-half acre partly burned and littered with ashes and debris. The age of the trees is unknown but the larger palms were undoubtedly 100 to 150 years old. Only three large palms were unharmed.

PRESENT METHODS OF CONTROL

Thus we have seen how vandalism and carelessness take on various forms. And we are well aware that something must be done. Park personnel and private citizens have devoted hours to the complex problem. Restrictions are now considered necessary in park maintenance. For instance at Mesa Verde National Park, Colorado, one can no longer wander freely among the fine prehistoric ruins. Too much damage already has resulted from careless treatment of the ancient stone dwellings. The situation has become so serious at Montezuma Castle National Monument, Arizona, that scholars only are permitted to study there. A rather ingenious scheme has been developed at Tumacacori National Monument, Arizona, which has worked with some success. Before entering the old church visitors are allowed to handle and scratch a typical adobe brick in the hope that when they go thru the church they will be less tempted to do the same thing there. In Yellowstone National Park wooden walks were installed in 1946. These structures have reduced by ninety per cent wear and tear and incidental vandalism in the thermal areas.

Probably the most successful method for decreasing the amount of scattered trash was inaugurated in 1950 in Mount Rainier National Park as "Operation Trash Bag." Paper bags were given to

[6] L. F. Cook, Chief Forester, National Park Service, "The 1952 Forest Fire Record."

visitors in which to place accumulated waste. The bag contained a legend explaining its use.

This is Your
TRASH BAG

Please use it as a container for your waste paper, tin cans, bottles and other debris, and deposit it in one of the trash cans provided for your convenience.

This is your National Park
Help Maintain Its Beauty

National Park Service
Mount Rainier National Park

Test week was set for July and on Monday the park was cleaned as usual. Distribution of the bags began on Tuesday, and personnel were instructed not to pick up any litter for six days. The results were excellent. The general appearance of the area was unlittered, and parking areas were brushed up in a very short time. The cost of 5,868 bags for the week was $38.73 and for clean-up was $49.68 making a total of $88.41 or a saving of nearly $62 over previous costs. Furthermore the public reaction was so favorable that many specifically spoke to the administration and on return to the park requested a bag if one was not immediately presented.[2] The trash bag has now been introduced in other areas under the supervision of the National Park Service.

FUTURE NEEDS

Altho much has been accomplished in reducing vandalism and abuse of national parks there is a great deal more to be done before damage can be eliminated. Basically this entails three needs: more effective management thru increased personnel, an expansion program to decrease crowding, and above all education of the public to a sense of responsibility.

An essential factor in effective management is an adequate staff of rangers and laborers. Robert Moses, New York Park Commissioner, once said:

> Mean parks make mean people—People are moved to trample, disfigure and destroy things which are ugly, inadequate and contemptible to begin with—People generally respect and care for good things and resent what is cheap, inadequate and shoddy—You

can expect cooperation from the public in the care of parks and recreation grounds only if we give them the best; that is, if you give them something which is obviously suitable, adequate, durable and perhaps even a little imposing.

Everything within a park must be kept clean, neat and orderly—dirt, filth and disorder breed more dirt, filth and disorder. In buildings and structures, *darkness* breeds *dirt* and *dirt* breeds *destruction*. Careless, inadequate maintenance invites contempt, misuse and often destruction by the public.

A broken table, a sagging toilet door, a dirty shelter or fireplace, a broken barrier or fence rail, an over flowing garbage container—or no garbage receptacle at all—invites and breeds vandalism and misuse. One initial or dirty saying scribbled on a table, the walls of a shelter, underpass or toilet invites a hundred more. A filthy, dirty toilet or rest room leads to improper use. Lack of adequate trash containers, properly placed, means garbage, trash and debris scattered throughout the area. A dirty, ill-kept, littered picnic grove is not conducive to good public manners and use. . . .[7]

To follow this advice successfully most areas need more manpower. Vandalism and abuse are costly, and the only way they can be checked is to have adequate ranger forces. In many places rangers, who should be protecting the parks and forests, teaching visitors the lore of the area and guiding tours, have to serve as parking attendants and janitors. Why? Because there is no money to hire people to relieve the already over-worked rangers.

Existing areas are not large enough to take care of the ever increasing throngs which crowd them. Establishment of new parks would relieve the pressure and permit restriction of sections of the older parks so that they might rest and recuperate. The service of our national parks to more people with more leisure time would be improved. We all have a right to relax and so we should make adequate provisions for our relaxation.

Finally, to further an already increased concern for the condition of our national heritage, education must play a leading role. Beginning in the home the most vivid lessons can be learned within the family. If the youngster learns from exemplary parents not to pick flowers, not to scatter papers around the landscape, not to throw bottles on rocks, our national parks would be in much better condition. The teacher, publisher, radio and television director, businessman, minister and advertising executive can and do help to educate the public to the whys and wherefores of good behavior in the parks.

Symbolic Smokey Bear, furry protector of our forests, has already accomplished great things in making the public more aware

[7] E. P. Romilly, "How to Cope With Vandalism in the Protection of Park Property through Area and Facility Maintenance," Mimeographed Document.

of its responsibility. His picture in a store window reminded a group of hunters that they weren't sure about the fire they had just left. When they checked, sure enough, there were still live coals and one corner of the fire had crept off into some fuel and would have spread had not the hunters returned. This is concrete evidence that Smokey is doing a job.[8]

Whatever the method, the need is to awaken a sense of responsibility in each person. Fredrich Law Olmsted stated this very nicely when he said:

> For the appearance of the land and the objects upon it generally results from the control which man himself exerts over the materials and forces of nature just as truly and as completely as the sculptor controls the appearance of the natural stone which he shapes. There is not one of us who is not responsible in some degree for making or marring the landscape of our world, from the heedless one who befouls it with papers thrown to the winds, or who drops a glowing match that sweeps the woodland with fire, to the engineer who remodels a whole country-side in the pursuit of some deliberate economic aim, of the patient artist who devotes himself for years to perpetuating the beauty of a single bit of ground. Whenever this human control over the land and the objects upon it is influenced by desire to make the resulting landscape more enjoyable than it would otherwise be, an element of artistry enters which often attains the quality of Fine Art.[9]

People proud of their parks will keep them in good condition. Why not tell them what they have to be proud of? This can be done by indoctrination of people as they enter an area, by corporation advertising as a public service, by series of articles printed where they are sure to catch the public eye. Smokey Bear has done a fine job for forest fires. Couldn't something be done in a like manner to popularize "preserve your national heritage?"

[8] Clint Davis, "Smokey . . . at Point of Sale," *Fire Control Notes*, April 1952, Reprint.

[9] State of Connecticut, Forestry and Park Commission, Ranger Training Program, Notes.

AN APPROACH TO DEVELOPING GLOBAL PATTERNS*

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The problem of welding the widely varying personalities, potentialities, capabilities and levels of achievement of a group of children entering a junior high school from several city elementary schools (as well as from outlying states) into a flexible, teachable unit defines clearly and unmistakable the magnitude of the responsibility facing a seventh grade teacher.

The primary goal of all teaching should be the development of pupils into finer human beings who will know right and acceptable behavior, and who will possess the courage needed to practice it in the face of opposition and who may thereby be able to dispel some of the indifference which paralyzes human action today. *What* we teach, therefore, becomes of even greater importance than *how* we teach it. The needs of our children then should be interpreted in the light of those of all mankind.

Man needs to learn to understand himself and his many worlds, to accept and cooperate with the natural laws of the universe and to realize that he is not a law unto himself. He must thoroly understand that part of his living which takes place in the physical world, and that *good living* depends upon his using it well. He must understand the many environments in which he lives—those of water and land, of climates, topography and soils, of plant and animal life; of energy, distance and space; of country, village, town and city; of home, school and church; of neighborhood, nation and world.

PUPIL PROBLEMS

In the process of becoming acquainted with the seventh grade social studies classes this fall, I gathered the general impression that many children find it hard to understand, that their grades are lower in this subject than in others and that many have developed a dislike for it. After some frank discussion as to the reasons behind these reactions, the following evolved: "I can't understand what I read." "I don't remember what I read." "I find myself reading the same paragraph over and over, trying to get some meaning out of it." "Most maps are a big jumble to me."

* This manuscript first appeared in mimeographed form in the *Bulletin* of the Nebraska Chapter of the National Council of Geography Teachers.

We could easily brush these admissions aside by saying that teachers are trying to use too difficult material. I would rather interpret them to mean that the material contains unfamiliar concepts and vocabulary which requires thoro and systematic teaching and that the child must be aided to see and understand some clearly defined patterns, global in scope, which can become a framework for organizing what is being learned. Pondering the reasoning of children further, we may find that we have tried to teach too much in too short a time, thereby failing to provide enough drill, so essential to mastery. We also may have overlooked the fact that understanding class discussion and viewing films does not necessarily insure individual learning and retention.

Reversing a Common Technique

Believing that the power of recall and the act of reproducing and identifying what has been learned must be practiced, I deliberately reversed a common teaching technique. Instead of using our textbooks as a first resource, the children were rather forced to dig back into their memories for knowledge that would aid us in developing some such needed understandings. Many big questions were discussed, each in turn or in relationship to one another. To illustrate:

"If we were to group all the things we see on our earth into two classifications only, what would they be?" Of course we had many opinions. To finally aid in narrowing the choices to those needed for further development, the children named while I classified in two columns. It soon became evident that we had two significant groups—the nature-made or physical features, and the man-made or cultural. Pictures were collected and mounted to illustrate the classification even more clearly and to provide the needed drill as well as pupil participation.

"These man-made features indicate man's activities on the earth. Why does man engage in them? How does man make a living today? How did he do it in very ancient times, during the early development of man? What are ten big ways in which man can make a living? Which did man use first? Which developed later? Which do you believe to be most important of all?

"What among the nature-made things would you rank most important? Of all the conditions in our environment which do you think affect us most? If you were asked to identify the place where you live in relation to the universe, how would you go about it? What is space? How far does it go? What is the difference between

a star and a planet? How far is our planet from the sun? How do these planets move?

"(Enough questions have been here listed to indicate their nature, extent and purpose). Much lively discussion occurred, heated at times, but when the text books were finally permitted, they were read with a purpose and for some 'strange' reason had grown more understandable."

Pupils Orient Themselves in Universe

The enormous size of our solar system, the spacing of planets and their movements, need clarification in as simple a way as possible. I also wanted each child to personally identify himself with the universe and to see himself in perspective. So, armed with pertinent information, we undertook the laying out of the solar system by each of us being a planet, spacing ourselves in relation to the sun, each walking his orbit and rotating at the same time. We even added the moons. The activity literally made us dizzy. Where did we find the space—on the playground. Following this work we attempted the making of a diagram, showing the planets to scale, (using the earth as the base unit), and the distances of each from the sun. Having thus projected our imagination and thinking into outer space, we tried to imagine what we would see as we looked at our own home planet from a distance. It was agreed that the great land and water masses would probably be the first pattern to take shape, then the river systems. On large outline maps of the continents we can now trace 35 of the main river systems of the world, showing the direction of their flow and naming the bodies of water into which they empty. We have discovered that the Atlantic Ocean probably receives more important river systems than any other ocean. What influence did this geographic fact have on the period of discovery and colonization of the Americas?

Probably next to be discerned in our view from outer space would be the highlands and particularly the continental divides. We now are in the process of tracing these on large outline maps, noting that the sources of rivers and the direction of their flow determine drainage areas. Greater detail is not necessary—as I believe a possible method of the development of global patterns with children has been indicated. Similar activities will be carried out to show population concentrations, climatic regions, vegetation belts.

Man Using the Earth

Having thus tried to highlight how truly wonderful is our earth and universe, it is even more important to help the child realize and believe that man is even more wonderful. Man can see, hear, think and believe. He can learn better ways of doing things, better ways of living and better ways of being or behaving. To accomplish this objective we shall study the great river valleys of the Tigris-Euphrates, Nile, Ganges and Hwang; the known cradles of civilization, their beginnings, development and present state of being (as well as similar developments in South and Central America). The details will be worked out as the class progresses, thereby giving opportunity for pupils to contribute to their utmost.

MAP NEEDS FOR A MODERN WORLD

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No accurate map of the world has yet been made, and large areas remain unexplored

The need for more and better maps appears to be somewhat in direct ratio to the rising complexities of life upon the earth. Yet few people are keenly aware of the function and importance of maps. Altho their value is practically beyond estimate, several salient functions are easily recognized. Maps are conventional pictures of areas—a type of geographical shorthand for presenting facts. They are tools intended to facilitate and clarify men's thinking, and are helpful in improving individual and national economies. They are important devices for putting things together, establishing relationships, showing causal effects and are useful in promoting business. For the motorist, a good road map is standard equipment. It tells him where to go and what he will find when he gets there; for travelers there is nothing more fascinating than a map. Altho maps are used in many lines of endeavor, they are the geographer's major device for broadening his vision beyond immediate habitat. All geographical work is done thru this medium, the techniques of which are developed in a great variety of rich detail.

Map Values Slowly Recognized

It is only in recent years that even the so-called educated class of people—those largely schooled in other areas of study—has become aware of the great need for accurate maps showing such environmental conditions as relief, climate, soil and native vegetation. They are beginning to realize that maps of this character enable interested persons to properly evaluate and draw conclusions concerning the potentialities and proper use of land. It is more or less common practice for specialists engaged in various industries and services, and in need of other types of maps applicable to their professions, to use topographic maps (the type that indicates surface configuration) as a basis for further cartographic details. There is in fact a rather wide-felt need for technical and other special-purpose maps pertaining to population conditions, languages, circulation patterns, agricultural and mineral productions, water resources, etc. Adequate geographical instruction for both cultural and economic enlargement, therefore, must of necessity lean heavily upon accurate and diversified map information.

Many Maps Are Quite Deceptive

The common man has been led to believe that maps are infallible. Good maps are not as plentiful as one might suppose. The facts are not encouraging. There are very limited portions of the world that are completely and accurately mapped. Altho highly garnished atlases showing maps of all countries are easily obtainable—atlases resplendant in a variety of colors, filled with the names of political divisions, land forms, and urban communities—they are in part quite misleading. Yet they make what they say sound most convincing. Their appeal is so magical that one may conclude that man knows a great deal about the earth. This is a very misleading and dangerous assumption, since no accurate map of the world has yet been made. There are large areas that are simply glossed over and are nothing more than geographical barrens.

Nor is this all. Most maps are in some ways very deceptive. In some countries where portions of the boundary line is not known, a particular map-maker who may never have been within a thousand miles of the place, may falsely design a map for public consumption. He may, and sometimes does, just show a straight line boundary. Such productions are too often copies of early and carelessly-made charts. Moreover, there are currently-made maps

in existence that show streams considerably off course, towns that have disappeared in the wake of deadly epidemics, and urban centers misplaced by as much as 15 miles. What is more, towns appear on the wrong side of rivers, and mountains where none exist at all. Furthermore, there are several million square miles of land surface about which map information is either a complete blank or very inadequate. Some people are very much amazed to learn that there are large areas in such places as Canada, Brazil, and Africa that have not even been explored. Map specialists tell us that only one-tenth of the land surface has been partially well mapped, and that even less is known about the great oceanic areas.

Altho criticism is irritating, it is important here to be brutally frank and point out still other cartographic shortcomings. In most of the world, special-purpose maps are almost nonexistent. Without them profitable planning is impossible. The meteorologist finds that he must be a slave to the weather map. A few years ago when the Du Pont Company wished to build a synthetic textile plant in North Carolina, the particular site could not be selected until a water supply map had been completed. During the early 30's, when the TVA was spawned, little work could be done until a corps of geographers had finished their topographic and special-purpose maps of the area. When the First World War came along it was discovered that Great Britain was producing on the island only enough food to feed her people for a period of six weeks. Britishers became so alarmed by the near-success of the German submarine that they got busy and completed a land utilization map just prior to the arrival of the Second World War, thus improving their home food economy. Great Britain later suffered a loss of several million dollars in their Tanganyika peanut experiment by proceeding without adequate soil maps—the type that prevents wrong farming in wrong places. It was simply another of those instances of economic waste which seem so unaccountable. Unfortunately many other examples might be sited. Further illustrations of dereliction in such matters are easily available.

Even the making of war is largely a matter of applied geography. Modern methods of warfare make it almost impossible to succeed without maps. Military leaders, fighting in foreign lands, have acquired a great respect for them. This is admirably illustrated in World War II, when 510 tons of map products were supplied to the allied invaders of North Africa. The European invasion necessi-

tated the making and printing of 70 million maps. In the Pacific theater a vast amount of thin, waterproof cloth maps were furnished to the navy and air forces. Little was known about the insular areas lying athwart the slow and arduous advance on Japan and, until map intelligence became available, the strategic services had to rely upon pictures and reports of a few missionaries and travelers. During this period of stress cartographers were hard pressed to provide the armed services with needed map information.

Necessity for a Stimulated Cartographic Program

Despite the fact that the earth is almost drowned with water, there still remains approximately 55 million square miles of territory in the continental land masses and islands scattered over the oceans. Only a minor portion of this is covered with dependable maps; the percentage is less than 5. Not a single continent can boast complete map coverage. West Central Europe makes the best showing of all. Amazing as it may seem, there are large portions of the Orient that are better mapped than the United States. In view of the position of the United States in world leadership, it is quite surprising how little of its territory is adequately covered with good maps. Only two small states are completely mapped. West of the Mississippi River there are hundreds of thousands of square miles of virgin territory awaiting the attention of the cartographer.

Surely none of these items needs further pouring over. Altho the picture of the salient facts is impressive, it is the tendency for such facts to be least digested and quickest forgotten. It is not the purpose of these paragraphs to becloud the virtues of American cartographers; among them are persons of considerable competence. Instead, and more properly, the function of these statements is to direct attention to the lack of public interest and support.

It is true that some very excellent maps of various parts of the world have been made, but the scale to which they have been built is far from uniform. This feature increases the difficulty in the matter of transposition or correlation of one map with another.

The So-Called "Millionth Map"

The movement for making a map of the world with a uniform scale and standard scheme of symbolization and reproduction was started in 1890 by the International Geographic Congress, then meeting in Switzerland. Interest in the proposal was slow in gather-

ing momentum. There followed a period of nearly 20 years of bickering over the details of the proposed map before agreement was reached. Obviously it was no ordinary undertaking. The complications were manifold, and there were points on which unanimity of thought were essential.

It was finally agreed that the Millionth Map, as it was called, should consist of 974 sheets, each 17 by 20 inches in size, not including margins. The scale adopted was 1:1,000,000, or 1 inch on the map to about 16 miles in nature. National whims were mitigated by the scale being given in both kilometers and miles, and all marginal information in the language of the producing country, as well as in French and English. The projection, or system of parallels and meridians on which the map is drawn, decided upon to take care of distortion in high latitude areas was the Modified Polyconic. It was also agreed that absolute elevations should be shown by contour lines and relative relief by a coordinated system of colored tints.

Central offices of the project were located in Southampton, England. Past shortcomings immediately appeared to be the spur to future action, and actual work got under way in 1909. Progress was interrupted by two disastrous world wars, and most of the completed maps (about one-third of the proposed total) were destroyed by German bombs. Altho the centralized forces have reorganized and the topographic map of Hispanic America (consisting of 107 sheets) was completed in 1945 by the American Geographic Society, the administrative force is greatly handicapped in its work, particularly in large areas of Asia, by existing political and economic tensions. The immediate outlook is not very encouraging. It now appears probable that the project will not be completed until a more amiable atmosphere develops between the democratic and communist camps thruout the world.

Current Cartographic Techniques

Obviously the Millionth Map should be brought to completion as early as possible. Under favorable conditions the job could now be done more rapidly and at less cost than ever before. In recent years the cartographer has become greatly indebted to the geophysicists for the invention of a number of delicate instruments that have facilitated his task. Thru the use of airborne equipment, it is possible to observe several thousand points per second and quickly

convert each item into effective ground measurements of position and elevation in a manner similar to surveying. The system then produces a map on which elevation is shown by contour lines, varying shades of gray, or a coordinated system of colored tints. The operation can be performed in clear sunlight or on the blackest of nights at altitudes as great as 40,000 feet. An area of 50,000 square miles can thus be observed in a single ray. The degree of accuracy is really phenomenal.

The chief instrument used is a sort of transverse panoramic camera, the heart of which is a 90-pound glass prism that hangs beneath the lens of the camera and rotates in a semi-circle. It photographs strips of terrain below and across the line of flight from horizon to horizon. The film used is 18 inches wide and up to 5,000 feet in length. To assist in correlation of photographs, other supplementary devices are used: an altimeter for checking altitude; a driftometer to determine the flight track and ground speed; and the intervalometer to insure proper and adequate overlapping of photographic strips. These and other developments have, in fact, opened up undreamed-of possibilities for mapping of vast unknown areas.

Map intelligence, therefore, is definitely essential to a modern world. The present age is faced with a new and dynamic kind of competition. The changes taking place in modern society are manifold. Obviously, every possible facility for smoothing the channels of adjustment should be utilized. While a good many facts are known about the earth, there is too much near-guessing about maps. maps need further support. Failure to support this type of enquiry The search for truth and the extension of knowledge regarding not only hampers progress but can result in much economic loss.

A DRAMATIZED RADIO PROGRAM

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We in the public schools are having a difficult time today competing with television, radio, movies, etc., because in this rapidly moving world, where hundreds of interesting things are happening by the second; students are finding it difficult to concentrate on one particular subject for any great length of time unless there is a great amount of gratifying activity connected with it. Therefore good teachers realize that something must be added to the curriculum to vitalize and enrich it to the extent that pupils will like to learn new things without coercion.

I have found in my seventh grade, Eurasian Geography classes that it is necessary to add considerable variety in order to retain the interest in the material about which we are studying, and to motivate the children to further study.

One of the many innovations in my classes is the dramatized radio program. It is always a matter of delight when I suggest that we plan one of them, because children take great pleasure in doing things that are up to date and activities that perhaps could be considered as mimicry of people or things they have seen.

In beginning the study of the country of Norway, the students and teacher decided that it would be interesting and worthwhile to start our work by having a radio program; hence we planned the following unit together.

STUDENT AND TEACHER PLANNING

The students determined under the guidance of the teacher the following material they thought worthwhile and important to know about the country of Norway.

1. To know the general topography of Norway.
2. To be able to visualize the climatic differences in the country and their influences on man.
3. To learn the important cities and major industries.
4. To discover the important minerals and their location with respect to the industrial areas.
5. To discover the important forested areas and the principal uses of the trees.
6. To know the important tourist attractions.

It was decided the following radio participants were necessary to present the above mentioned material.

1. A moderator or radio announcer.
2. A person to give commercials.
3. Six "world travelers" who had just returned to the United States from Norway to present the preceding material.
4. A panel of six to prepare pertinent questions to ask the "travelers."

We resolved that one day would be spent in the preparation of the material and the following day it would be presented.

It was suggested, to the students who were chosen to be the "world travelers," that a slight Norwegian accent and/or fictitious names of famous men or women could be used.

The people appointed for the panel were asked to sit together in a certain section of the room and each was to formulate at least one good question to ask the "authority" giving the talk. Hence the speakers knew that thoro preparation was necessary in order to answer the questions.

Presentation

At the beginning of the period the following day the moderator seated himself at the teacher's desk—to his right was a microphone made of a broomstick placed in a wooden base with a tin can attached to the top. Following station identification the announcer asked the sponsor for a commercial, and subsequently the first "world traveler" was introduced. Each talk was given in succession, pausing at the beginning, middle and end for a commercial.

It might be wise to mention an example of the type of report given by a student who was reporting on forestry. She was supposedly a very rich girl from the United States who was globe trotting for lack of something better to do, and as her plane traveled over the southern part of Norway it had engine trouble and was forced to crash land in a very densly forested area. After escaping injury the crew and passengers began walking to find their way to the nearest village. Along the way they came upon a saw mill. The student described the type of trees and the lumbering operation in the area thru which she passed.

It was a dramatically interesting as well as an informative report and held the interest of the students to the end.

Conclusions

Every student was extremely quiet during our radio program and listened with great eagerness to each of the presentations, and since the students who gave the reports were very thoro in their preparation and delivery they created a desirable introduction to the study of the country of Norway.

A follow-thru of course with the use of maps, pictures and slides brought the study of this Scandinavian country to a successful conclusion.

Suggestion

To teachers who may attempt such a radio program, it is suggested that the program be short enough to be completed in one period because the interest in such a project will not be as great the second day.

UNIVERSITY TEACHING OF CARTOGRAPHY

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In February, 1953, the writer prepared a questionnaire and mailed copies to a number of American colleges and universities which offered courses in cartography. The questionnaire requested a percentage distribution of time devoted to various phases of this subject in the courses offered at the particular school. Questions relative to the interests of the school, the department and the instructor were included to determine the ways in which these interests might have affected the course content.

Forty replies were received, and, of these, 24 included sufficient material as to lend themselves to inclusion in this paper. Fourteen schools offered only a single course; 11 offered more than one. These 24 schools represent a great variety of types, sizes and interests, and are well distributed thruout the United States. The total number, however, is too small and the responses too varied to permit the computation of means and averages. Furthermore, there is, perhaps, less significance to the mean situation than there is in the extremes and in the wide ranges of time devoted to any one phase of the subject.

THE SINGLE CARTOGRAPHY COURSE

As might be expected, the schools which offer only a single course are the smaller ones, or those whose emphasis is on subjects other than geography (teaching, geology, etc.). The major problem of content where a single course is offered is one of coverage. Three approaches are recognizable: 1. a little of everything, 2. orientation toward the direct interests of the students, 3. a "cultural" approach, oriented toward the instructor's concept of "cartography." Table I indicates the percent of time the 14 schools devote to the several phases of cartography in the one course which they offer.

TABLE I

THE SINGLE CARTOGRAPHY COURSE*

School	1	2	3	4	5	6	7	8	9	10	11	12	13	14
map reading	5	20	5	8	10	6	20		5	5	20		12	10
practice in inking	10	5	5		10	4	5	25		5			2	15
hand lettering	10	5		4	5	6	5			5			8	
interpretation of aerial photos		5	5	8		4		5	20		5		6	
charts, graphs and diagrams	20	10			5	9	5	10		2		37	6	5
projections	10	10	50	8	10	16	15	3	5	10	10	38	8	10
practice in handling equipment	10	10			10	20	15	7	25	2	25		3	20
study of reproduction methods	5					2	5	2	5	2			2	5
stick-up-type, zip-a-tone, *etc.*						3	2	5						
selection and compilation of data				16	20	6	5	7	5				4	5
evaluation of source materials	5					2	2	5	10	3		12		
mechanical lettering	10	5	5	4	5		5	10					4	10
history of maps		10	20	8	5	8	5	1		3	40	12	5	
physiographic and block diagrams	10	5	5	8	5	7	3	5	10	3			6	
relief models				24		1		3					3	5
regional analysis from maps		5					5			4			6	5
surveying				8	5								8	5
field techniques for gathering data	5	10		16				2	15				8	5
map librarianship					5	1	2							
other							2			55				

* In these tables, very few columns total 100 per cent. It is felt that, if the figures were to be adjusted to 100 per cent, a false degree of accuracy would be implied. The percentages, therefore, are given as they were reported.

Inevitably, a single course cannot do justice to the entire subject. Where this is attempted, the amount of time devoted to each phase must be reduced to an hour or two. Such broad coverage might be suitable for an introductory course but this is not the purpose for which most are given. Orientation toward major interests of the students is more logical altho this can be carried to extremes along a particular tangent, such as the preparation of charts and diagrams. Many of these single courses are related to geology and show definite interests in physiographic and block diagrams. In several cases the whole coverage problem has been avoided by concentrating on cartography for its cultural value, spending up to three-fourths of the time on history and projections.

It would seem that there are two objectives which can be reached in a single course in cartography: the understanding and use of maps, and the making of maps. No attempt should be made to train professional cartographers, nor should the broader aspects of cartography be sacrificed to obtain proficiency in a single phase of the subject.

In order to reach these two objectives they should be combined. Practice in the use of equipment, hand lettering, *etc.* should not be given very much time of its own. Rather, the exercises should be designed to teach the use and understanding of maps, and should be of such a nature that the student would use map-making techniques in completing them.

The study of projections, for example, should not be undertaken so that the student can show his virtuosity in the mathematical and geometrical intricacies of the construction. It would be better to present the problems of phenomena distribution, so selected by type and size and shape of area, that the student might become aware of the advantages and limitations of different projections. The completion of these problems should involve the student in the use of specific types of cartographic equipment, the project being carried only to the point at which its lesson becomes mastered and the hand work becomes repetitive and of decreased value.

It is similar with the use of field techniques and aerial photographs, reproduction techniques and areal analysis. Several hours spent on these items does not lead to any proficiency in them. The time can be profitably spent, however, if the student becomes aware of the modifications which they produce in finished maps and of the limitations and compromises incident to map compilation.

TABLE II

FIRST COURSE IN CARTOGRAPHY

School	1	2	3	4	5	6	7	8	9	10	11
map reading	7	10			86		100	10	20	15	
practice in inking	20	20	25	5				10			
hand lettering	10	5	5	5		10		10			
interpretation of aerial photos	7	10	5						50	5	
charts, graphs, and diagrams		2	10	15		10		2			
projections	5	10	20	20	10	20					20
practice in handling equipment	20	10	25	20		35		10			
study of reproduction methods	4	2	10	5		5		2			
stick-up-type, zip-a-tone, *etc.*	4			5		5		2			
selection and compilation of data	2	10	20					10			
evaluation of source materials	2	10							10		
mechanical lettering	14	5						10			
history of maps		2			4	5					
physiographic and block diagrams			10					2	5		
relief models		1						2	5		
regional analysis from maps	2								20	5	
surveying	2										20
field techniques for gathering data						10					
map librarianship		1									
other	4	2									

MULTIPLE COURSES IN CARTOGRAPHY

When two to six courses are offered, there are any number of possible ways to set up the individual programs. Consequently, no two schools follow the same pattern. In general, two approaches are possible: 1. a similar content for some or all of the courses with more advanced material presented in later ones, and 2. a different content for each course, with each phase of cartography being considered only once in the course sequence. In practice, most schools use a combination of these two, with the majority favoring the second approach with some duplication of previous work.

Usually the elementary cartography course is concerned with projections, map reading and analysis of areas, interpretation of aerial photographs and a relatively smaller amount of work with cartographic equipment. Table II shows the per cent of time spent on these and other topics by the 11 schools which reported two or more courses in cartography. This introductory course is, in most cases, one of map familiarization, in which the student works with published maps, but does comparatively little map work of his own.

In the second course, summarized in Table III, the student learns to make his own maps, selecting and compiling data, inking, lettering and studying reproduction methods. A few schools reserve projections for this course, and most of them teach the history of maps

here. Specialized aspects of cartography and advanced techniques also find places in the second course. Physiographic and block diagrams, relief models and charts and diagrams have time devoted to them. To a certain extent, this is a "follow-up" course, in which material introduced in the first course is carried to a higher level in the second. There are many relationships between the two.

TABLE III

SECOND COURSE IN CARTOGRAPHY

School	1	2	3	4	5	6	7	8	9	10	11
map reading					10				10	20	
practice in inking	14			20				10	5	5	20
hand lettering	14			10			10		3		10
interpretation of aerial photos		5							5	5	
charts, graphs, and diagrams	10	5					15	5	3		
projections			5	5		10	15		10	20	40
practice in handling equipment	14			10			25	10	5	5	10
study of reproduction methods	5	5		10		15	10		3	5	
stick-up-type, zip-a-tone, *etc.*	10	5		20		15	10		2		
selection and compilation of data	5	40	35	10	10		25	20	20	5	10
evaluation of source materials	5	10	50	5	10			5	3	5	
mechanical lettering	10	5					15	10	2	5	10
history of maps			5	5	10			20	5	5	
physiographic and block diagrams	5					10	20	5	5	5	
relief models	5					10			2	5	
regional analysis from maps										5	
surveying			5						2		
field techniques for gathering data						25				5	
map librarianship		1	5							5	
other	7	24		5				15			

If a third course in cartography is offered, it tends to be one of specialization (Table IV). It may take one of four forms: 1. advanced work in a field already covered (history, projections, *etc.*), 2. advanced work in another aspect of cartography not offered in previous courses, 3. field work and the selection and compilation of data, and 4. individual research. In addition to this specialization within the third course, there may be others offered which are specialized in their entirety, such as photogrammetry.

The percentages presented in the tables indicate the wide divergences in the several approaches toward the determination of course content. At the same time, there is a certain amount of agreement, as was summarized above. It is suggested that the following would form a logical sequence of courses, suitable to a variety of situations. It is recognized that some modification might be necessary in order to serve the needs of specific groups of students. However, extensive development along specific tangents can only

TABLE IV

THIRD COURSE IN CARTOGRAPHY

School	1	2	3	4	5	6	7*	8*	9	10	11
map reading				20							
practice in inking					10						
hand lettering					2						
interpretation of aerial photos					5		15	10			
charts, graphs, and diagrams					20	7					
projections				5	20	25					
practice in handling equipment					15			5			
study of reproduction methods		5			2						
stick-up-type, zip-a-tone, *etc.*		10			4						
selection and compilation of data	25	40	75		5						
evaluation of source materials	25	20		5							
mechanical lettering		5			2						
history of maps	5			20	5	10		5			
physiographic and block diagrams					2	7					
relief models											
regional analysis from maps	15							5			
surveying				5			60	20			
field techniques for gathering data				10			25	35			
map librarianship	10			5	2						
other	10	20		30	6	45		10			

* These two schools describe this as a field course.

result in the weakening of a broad understanding of the subject.

First Course. The objective should be one of familiarization with maps. The content should include: history; projections; problems of scale; kinds and sources of data, including aerial photographs, topographic and other special maps. Whenever possible, cartographic tools should be put to use in the laboratory. Altho techniques of drawing, inking and lettering should not be overemphasized, they should be introduced in the first course.

Second Course. The objective should be that of constructing maps. The course should be integrated with a field course, or should include some field techniques. The emphasis should be on the selection, compilation and recording of data, coupled with practice in the special cartographic techniques and tools incident to the production of maps. Some consideration should be given to reproduction methods and to the development of charts and diagrams. If this is the terminal course, introductory color problems and other special work might be included. They should, however, be relegated to a minor position, it being recognized that there is insufficient time to generate competence in special fields without seriously impairing understanding of the whole.

Third Course. The objective should be threefold: a study of advanced techniques, acquisition of professional competence, and

individual progress. The content should include work in the special problems and techniques of depicting relief; the use of color; photogrammetry, *etc.* The major emphasis of the course should be on individual work, within the framework of the course objectives. The preparation of thesis maps should be outside of this course; altho, if the problems are unusual, they might be worthwhile as a research project. The third course might be elaborated into several, if possible, with the additional courses being wholly specialized.

Summary

There are three areas wherein students might profitably engage in the study of cartography: 1. becoming familiar with maps, 2. learning how to make them, and 3. acquiring professional competence. A minimum of three courses is indicated. If less than three are offered, the objectives should conform to the above order. Altho some modification of course content may be necessary where non-geography students are involved, the interests of these people can still be fitted into the threefold course schedule. Prospective teachers, business majors and those seeking to enhance their general knowledge, could take the first course only. Further work is not always necessary. Geologists, and others needing a knowledge of map making, would take course two in addition. This would be a terminal course for geography majors, and should fit them for the preparation of thesis and other maps. The third course, at the graduate level, would be designed for those expecting to enter professional cartography; altho for these people, additional work is needed. Courses in surveying, engineering and art might be recommended. The third course should be expected of a doctoral candidate in geography, tho not of a master's. Its content must necessarily be tailored to the specific group of students and their needs. Beyond these three courses in cartography, there may be others—more specialized.

In this three-course sequence, each unit is designed to create a proficiency in one particular aspect of cartography. Each of the four possible combinations (first course only, first and second, all three, all three plus additional work) is a coordinated program leading to sufficient cartographic competence for large groups of students, depending on their aims and interests. As such, and with minor revisions, this sequence might well substitute for the divergences of emphasis indicated in the tables.

GEOGRAPHICAL PUBLICATIONS

George B. Cressey. **How Strong is Russia? A Geographic Appraisal.** Syracuse University Press, Syracuse, New York, 1954. ix and 146 pages, 11 maps and 54 photographs. $3.00.

This book provides an excellent, brief and lively introduction to general Soviet geography. It is a book to be read with pleasure by any geographer, teacher or citizen who wishes a broad overview of the Soviet Union, or by a student before beginning work on more detailed studies. The material was prepared originally for presentation as the Hill Foundation Lectures at St. Olaf College, Northfield, Minnesota. In spite of substantial additions in the printed volume, the short challenging questions and the simple clear conclusions, characteristic of Professor Cressey's lectures, shine thru the text and make for easy reading. The attractiveness and the value of the book is greatly enhanced by the large number of recent photographs that give a concrete sense of actuality to a land difficult to envisage. From a background of research and teaching in the Soviet field extending over more than two decades and from wide travel within the Soviet Union, the author has chosen for presentation a few major themes of broad general interest. These could readily be used by any teacher whose courses touch the Soviet Union in any way.

CHAUNCY D. HARRIS

University of Chicago

Leonard Hadlow. **Climate, Vegetation and Man.** Philosophical Library, New York, 1952. 288 pages. $4.75.

This book by a British high school senior geography master is a secondary school world geography. The first half of the book is an introduction to climate and vegetation; the remainder is a "survey of life in its climatic setting."

The first 129 pages include earth in space, position on the earth and elements and controls of climate. This is the best part of the book. The pedagogical challenge in teaching earth-sun relationships and general atmospheric behavior is met effectively by use of diagrams and analogies drawn from common experiences. Geography teachers in elementary and secondary schools will find this part worthy of perusal.

Part II is a brief sixteen-page treatment of natural vegetation. Five pages are devoted to major plant formations; no distributional patterns are shown; and the role of man in the development of plant communities is emphasized only in the most obvious instances, e.g. the dust bowl.

Part III is the "survey of life in its climatic setting." The world is divided into five broad temperature zones and thirteen climatic types. For each climatic subdivision the distinctive climatic characteristics and vegetation types are given. General features of man's occupance within each habitat and regional variations of human occupance within a framework of climatic similarity are presented.

Other assets of the book are 1. the exercises which follow each chapter, and 2. the theme of resource conservation which permeates the text. However, geography teachers in the United States will probably not find this work acceptable as a textbook. Place names and illustrations expectedly center in England, British Isles or Europe. The role of climate in the activities of man is so overemphasized that in places the book is strongly deterministic. One wonders why the author indicates that tropical lowlands are hardly suited to white man, that mid-latitude continental climates are "temperate," that trade

winds occur in the vicinity of Baltimore, that the climate of North Island, New Zealand is Mediterranean, and that colored skin is largely the result of climate.

JOHN F. GAINES

University of California, Los Angeles

Katherine E. Wilkie. **Will Clark—Boy in Buckskins.** The Bobbs-Merrill Company, Inc., New York, 195. 192 pages. **$1.75.**

This volume is one of a series called The Childhood of Famous Americans Series each written about the childhood of a great American of the past. This one tells the story of the childhood of Will Clark and is true to time, place and character. It is told in simple words of action so that the reader can readily put himself into the places of the characters and enjoy thrilling and amusing experiences from the past.

The story deals with a series of exciting experiences that Will Clark had from early childhood thru adulthood. It is vivid in its description of Will walking a trail at the point of an Indian knife, taking a string of horses to an American Army right under the nose of British redcoats, saving a friend who had been bitten by a cottonmouth, and traveling down the Ohio by flatboat. The story also describes the exploration of the Louisiana Territory. The hardships and triumphs which Will Clark and his men experienced as they traveled thru the unknown wilderness, up the wide Missouri and across the Rocky Mountains to the Pacific, are realistically portrayed. The author's description of the natural environmental conditions and her use of currently used place names make it easy to trace the expedition on our maps.

The book reflects early American life, ideas and ideals and is an excellent background library book for lessons in history and historical geography.

The excellent black and white illustrations help in visualizing the experiences and landscapes. The book has a low vocabulary level and is well suited to the lower middle grades. The information would also appeal to students of the Junior High School level.

MARY VIOLA PHILLIPS

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New Kensington, Pennsylvania

Eleanor Clymer. **Make Way for Water.** Julian Messner, New York, 1953. 63 pages with illustrations. **$1.60.**

What a dry summer and a shortage of water means to a large city is told in another of the Everyday Adventure Stories, *Make Way for Water.*

Peter Verner, an 11-year-old boy who lived in the country, came to understand the need of an adequate water supply for a city of eight million people. Thru his visit to the city, he learned the city dwellers' many uses of water in personal use, fire fighting, cooling systems, factories, etc.

Mr. Carter of the city Water Supply Department explains to Peter the city's water needs and the necessity of building a new reservoir in the heart of the valley where the Verner farm is located.

The author also tells of the farmer's need of an adequate water supply for personal use, crops and farm animals and how it is met.

Thru the friendship of Peter Verner and Mike Carter, son of Mr. Carter of the Water Supply Department, visits to the country and city make possible the explanation and discussion of our water needs and how they are met.

The book is full of facts with exciting situations written in a style and language that an 8-12 year old could understand and enjoy.

It could well be used as supplementary material in lessons on conservation, and would be excellent in teaching the child an appreciation of his environment and its

influences on everyday life. All this brings us to a study of human relationships and the interdependence of man which are stressed thruout the book.

The black and white illustrations are simple yet quite descriptive.

Pauline Schlechty

South Side School
Whiting, Indiana

Hammond's **Global-Geography Atlas.** C. S. Hammond & Co., Maplewood, New Jersey, 1953. $0.75.

This atlas is an improved and enlarged version of the desk edition of the COMPARATIVE WORLD ATLAS. (See *Journal of Geography*, Nov. 1953, p. 359.) The major improvements include four colored maps replacing black and white reproductions, larger maps for the United States, political association and climatic regions, addition of railroads to all political maps, and city inset maps to some. The density of population is now included in the atlas instead of on the back cover and the United States physical map is replaced by a relief map.

The major additions are: a world map of agricultural regions, a double page map of the U. S. S. R., a page of earth-sun relation diagrams, a political-physical map of Australia, a polar map of the world, and maps showing the "High Spots of World War II." Other new maps are: The Arctic, Antarctica and a world map of standard time zones. The latter is not too valuable because the zones are based on standard meridians only, and no local variations are given.

The atlas has only three maps depicting areas smaller than a continent. These are the political and relief maps of the United States and a map of the U. S. S. R. The inclusion of a table of contents would add further improvement. There is a slight overemphasis on the Polar area. The atlas does offer a wide variety of map projections and could be useful in the field of map reading. It is inexpensive, portable, and can be useful in beginning courses on both the college and secondary school level.

Walter H. McDonald

Austin Peay State College
Clarksville, Tennessee

Virginia S. Eifert. **Three Rivers South: A Story of Young Abe Lincoln.** Dodd, Mead & Company, New York, 1954. 176 pages with illustrations. $2.95.

This is a good book for either junior or senior high school pupils. It is easy reading and is the sort of thing that helps one realize the joy and relaxation to be found in this activity. The story carries one thru alternating hardship and good fortune, suspense and calm, as he journeys with Lincoln and his mates down the Sangamon, Illinois and Mississippi rivers by flatboat to New Orleans.

Three Rivers South is excellent supplementary reading for both geography and history. Here is another chance for students to see vividly the many influences of natural environment upon the lives of individuals and upon the courses of nations. Lincoln's character was forged in part from the ordeals of prairie mud and cold, from the majesty of the Mississippi and the beauties of the wilderness. It reveals in a pleasing manner the relationships between a great river system and the inhabitants of its basin.

The reviewer was able to find only one error as to fact—a geographical one on page 84. Here it seems as tho the flatboat encountered the mouth of the Missouri river after having floated several miles down the Mississippi from St. Louis.

The charming simplicity of the book is typical of Lincoln himself. There are fine

examples of the great man's humor and noble heart on several pages. Its 176 pages tell a good story well, and one regrets that it does not continue for another 176.

WILTON TUCKER

Lafayette High School
Lexington, Kentucky

Philips' Pictorial Atlas of the World. George Philips and Son, Ltd. 30-32 Fleet St., Lincoln, E. C. 4. C. S. Hammond & Co., Maplewood, New Jersey, United States Distributors. 24 pages, colored maps and illustrations. 7½″ by 9″. Price $.75.

This is a colorful pictorial atlas for children printed in England. The first several pages are devoted to globe pictures, pictorial illustrations of landforms, and systematic illustrations showing a series of different scale maps fit into progressively smaller scale maps.

Seven equal area maps of the world show generalized patterns of: Where people live in the world, landforms in the world, January and July temperatures in the world, annual amounts of rainfall and wind belts, where foods are grown in the world, the countries of the world and major ocean routes, and simple physical and political maps of Europe and especially the British Isles.

Each map is accompanied by a simple descriptive legend. Upper grade children, who have learned to use numerical values for expressing measurements in their legends on wall maps and in atlases, will want to translate such descriptive legends as "where most people live" into "number of people per square mile."

A unique feature of this atlas, that will interest many children, is the amount of selected data indicating extremes that is included on the simple maps of the world. For example the hottest and coldest places are located on the temperature maps. The precipitation map includes a general diagram of the direction the Trade Winds and Westerlies blow so that the child can begin to see these relationships.

None of the equal area maps carry any lines of longitude. Only the following parallels are shown: the equator, the 23½° north and south, and the 66½° north and south latitudes are shown.

A number of 3″ by 3″ selected illustrations showing such features as a fiord, places such as a desert, and some kinds of work such as a rice paddy are placed in the margin or bottom of most pages. The definte characteristics of each feature illustrated has been simplified. Such illustrations should of course be supplemented with additional visual aids.

The simplicity of this *Atlas* is its strongest feature. The colors are sharp and effective in showing generalized ideas. This *Atlas* would be of use as supplementary material for intermediate grades, especially where wall maps and adequate maps are not available in the textbook.

MAMIE L. ANDERZHON

William Beye School
Oak Park, Illinois

GEOGRAPHICAL MATERIALS RECEIVED

Bruce D. Campbell. **Where the High Winds Blow.** C. S. Hammond Co., Maplewood, New Jersey, 1952. 220 pages with illustrations and notes and questions.

Glenn O. Blough. **Not Only For Ducks, The Story of Rain.** McGraw-Hill Book Co., New York, 1954. 54 pages with illustrations. $2.25.

Map Collections in the United States and Canada, A Directory. Special Libraries Association, 31 E. Tenth Street, New York 3, 1954. 170 pages with map and appendices. $3.00.

W. G. Moore. **A Dictionary of Geography.** Penguin Books Ltd., London, 1952. 191 pages with illustrations. 2/—.

Alice Taylor. **South Africa.** Holiday House, New York, 1954. 26 pages with illustrations. $1.25.

M. Y. Nuttonson. **Phenology and Thermal Environment as a Means for a Physiological Classification of Wheat Varieties and for Predicting Maturity Dates of Wheat.** American Institute of Crop Ecology, Washington, D.C., 1953. 108 pages with maps, charts and bibliography.

John Tebbel. **George Washington's America.** E. P. Dutton & Company, New York, 1954. 478 pages with chronology, notes and index. $5.00.

John C. Johnson. **Physical Meteorology.** Wiley Technology Press, New York, 1954. 393 pages with appendix, index, charts and diagrams. $7.50.

Cutright, Charters and Clark. **Living Together Around the World.** Macmillan Co., New York, 1953. 280 pages with illustrations, charts, maps, word list and index. $2.72.

Cutright, Charters, King, Dennis and Potter. **Living Together in the Americas.** Macmillan Co., New York, 1953. 502 pages with illustrations, maps, word list, reference table and index. $3.68.

Ruby M. Harris. The South Series of four filmstrips **Resources and Manufacturing Industries** (60 frames); The Middle West Series of four filmstrips **The Cornbelt** (50 frames). Society for Visual Education and Rand McNally & Co., Chicago, 1954. Each strip $6.00 and complete series $19.00.

Hammond's **Chalkboard Wall Atlas** including the World (Polar and Eckert Projection), Europe, the United States, Africa, Australia and New Zealand. C. S. Hammond Co., Maplewood, New Jersey, 1953.

P. R. Heaton. **The Geography Room in a Secondary School.** Prepared for the Executive Committee of the Geographical Association c/o Park Branch Library, Duke Street, Sheffield 2, England, 1954. 20 pages with illustrations. 2s. 6d.

Vinson Brown. **How to Make a Home Museum.** Little, Brown & Co., Boston, 1954. 214 pages with appendices and index. $2.50.

Glenn T. Trewartha. **An Introduction to Climate,** Third Ed. McGraw-Hill Book Co., 1954. vii and 402 pages with illustrations, maps, appendices and index. $7.00.

O. H. K. Spate. **India and Pakistan, A General and Regional Geography** with a chapter on Ceylon by B. H. Farmer. E. P. Dutton & Co., New York, 1954. xxxvi and 827 pages with 160 maps and diagrams, 24 tables, appendix and index. $12.75.

William Lytle Schurz. **This New World: The Civilization of Latin America.** E. P. Dutton & Co., New York, 1954. xii and 429 pages with maps, illustrations and index. $6.00.

George J. Miller, Almon Parkins, Bert Hudgins. **Geography of North America.** 3rd Ed. John Wiley & Sons, New York, 1954. xi and 664 pages with maps, illustrations and index. $7.50.

William D. Thornbury. **Principles of Geomorphology.** John Wiley and Sons, New York, 1954. ix and 618 pages with maps, illustrations, references and indices. $8.00.

Vernon Quinn. **Picture Map Geography of Canada and Alaska.** J. B. Lippincott, Philadelphia, 1954. 122 pages with illustrations by Da Osimo. $3.00.

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Oscar Lewis. **George Davidson, Pioneer West Coast Scientist.** University of California Press, Berkeley, 1954. 146 pages with maps, photos and index. $3.50.

Maisie Herring. **The Young Traveler in Ireland.** E. P. Dutton & Co., New York, 1954. 224 pages with index and glossary, map and photographs. $3.00.

Mariann Meier. **The Young Traveler in Switzerland.** E .P. Dutton & Co., New York. 1954. 223 pages with index, glossary, map and photographs. $3.00.

Harold Watkins. **Time Counts: The Story of the Calendar.** Philosophical Library, New York, 1954. xii and 274 pages with appendices and index. $4.75.

Ronald and Catherine Berndt. **The First Australians.** Philosophical Library, New York, 1954. 144 pages with photographs, illustrations and bibliography. $4.75.

Don Wilcox. **David's Ranch.** Julian Messner, New York, 1954. 62 pages with illustrations. $1.60.

Jones and Darkenwald. **Economic Geography,** Revised edition. Macmillan Company. New York, 1954. xxv and 612 pages with pictures, maps and charts and index. $6.75.

George R. Stewart. **The Opening of the California Trail.** University of California Press, Berkeley, 1953. viii and 115 pages with maps and 14 photos. $3.75.

Bedřich Hrozný. **Ancient History of Western Asia, India and Crete.** Philosophical Library, New York, 1953. xv and 260 pages with maps, index and illustrations. $12.00.

V. D. Stace. **The Pacific Islander and Modern Commerce.** South Pacific Commission, Noumea, New Caledonia, 1954. Technical Paper No. 54. vi and 29 pages with illustrations, appendix and summary. 2/-.

Catalogue of Lending Collection—1954-55. Franco-American Audio-Visual Distribution Center, Inc., 972 Fifth Avenue, New York 21, 1954. 30 pages. Free upon request.

A Guide to Historical Cartography. The Library of Congress, Reference Department, Map Division, Washington, 1954. 14 pages and index. $.35.

Loyal Durand, Jr. **World Geography—An Introduction.** Henry Holt and Company, New York 17, 1954. vii and 372 pages with illustrations, maps, diagrams and index. $5.25.

Calvin F. Schmid. **Handbook of Graphic Presentation.** The Ronald Press Co., New York, 1954. vii and 316 pages with diagrams and index. $6.00.

Otis W. Freeman and Howard H. Martin, Eds. **The Pacific Northwest—An Over-All Presentation.** Second Edition. John Wiley & Sons, Inc., New York, 1954. xvi and 540 pages with 116 plates, maps and index. $8.50.

Winifred Goldring. **Devonian Crinoids: New and Old, II.** New York State Library Gift and Exchange Office, Albany, New York. Circular 37, February 1954. 51 pages with 6 plates.

Educators Guide to Free Films, Fourteenth Annual Edition, 1954. Educators Progress Service, Randolph, Wisconsin, 1954. xiv and 566 pages with indices. $6.00.

Educators Guide to Free Slidefilms, Sixth Annual Edition, 1954. Educators Progress Service, Randolph, Wisconsin, 1954. ix and 209 pages with indices. $5.00.

Carroll Lane Fenton and Mildred Adams Fenton. **Our Changing Weather.** Doubleday and Co., Inc., Garden City, New York, 1954. 110 pages with illustrations. $2.50.

Oliver Wendel Beimfohr. **The Industrial Potential of Southern Illinois,** Ph.D. Thesis. Southern Illinois University, Carbondale, 1952. 138 pages with maps, diagrams and bibliography. $1.50.

Elementary Teachers Guide to Free Curriculum Materials, Eleventh Annual Edition. Educators Progress Service, Randolph, Wisconsin, 1954. xiii and 332 pages with indices.

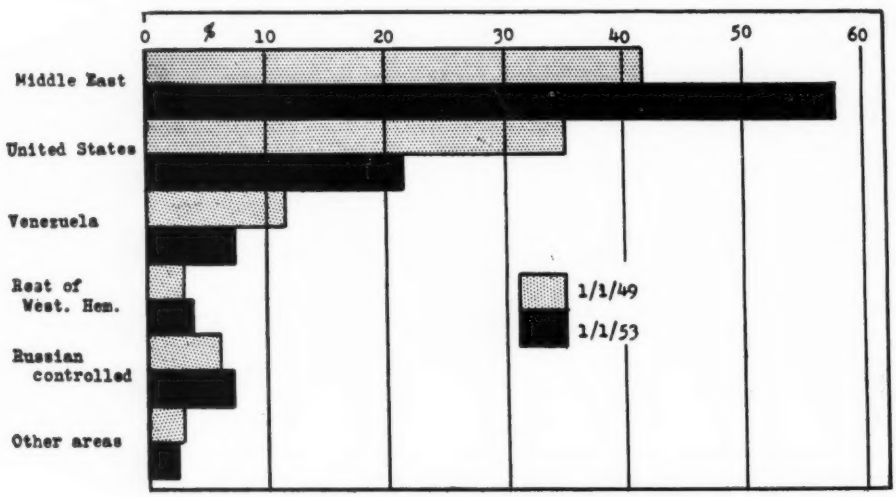
EDITORIAL NOTES AND NEWS

Here is an interesting problem for historians, geographers, and the courts of law. The Louisiana legislature recently established its "coast" as three marine leagues beyond the boundary set by an Act of Congress in 1895. This places the "coast line" about 35 miles into the Gulf of Mexico. The new law makes a distinction between "shore line" and "coast line." Will other states follow this precedent? What influence will the possible presence of valuable resources, such as petroleum, have upon future action?

Construction has started on a new oil refinery at St. Paul, Minnesota. A pipe line from Clearbrook, Minnesota, to St. Paul will provide a supply of Canadian oil.

Two new large oil refineries are nearing completion in the Pacific Northwest, at Ferndale, and Anacortes, Washington. Canadian and Venezuelan crude oil will be used. The Vancouver refinery uses Canadian crude.

It is interesting to note that more than half of the estimated crude oil reserves of the world are in the Middle East and that the relative proportion has increased from 41.6% in 1949 to 57.8% in 1953 (see diagram). During the same period the relative proportion in the United States has declined from 35.0% to 21.5%. About 77% of the world's crude oil reserves are outside Communist control, more than three-fifths of which is in the Middle East. Estimates indicate that a little less than half (48.5%) of the world reserves in non-Communist countries are in Saudi Arabia, Kuwait and Iraq. This emphasizes the importance of the Middle East in international affairs. Although world estimates for 1953 are not yet available, it is probable that the relative position of the United States improved during the year, as proven reserves of crude oil increased by about 901 million barrels. This gives the United States an estimated crude oil reserve of 29.6 billion barrels. If we add natural-gas liquids the United States had a total liquid hydrocarbon reserve of 34.6 billion barrels January 1, 1954.



The USAF Aeronautical Chart and Information Center produces and distributes all types of aeronautical charts and related publications that are required by the Air Force in carrying out its world-wide mission. Requirements for photogrammetrists and cartographers are both staff and line positions in the Headquarters, Aeronautical Chart and Information Center, Second and Arsenal Streets, St. Louis 18, Missouri and the Office of Research and Liaison of ACIC, 25th & Oklahoma Avenue, N.E., Washington, D.C.

The principal types of work for which personnel are needed includes the research and evaluation of geodetic and cartographic materials and similar data for producing charts. The work also includes photogrammetric and cartographic compilation and drafting of all types of charts and publications.

Application should be made for positions in the St. Louis area to the Civilian Personnel Office, USAF Aeronautical Chart and Information Center, Second and Arsenal Streets, St. Louis 18, Missouri. In the Washington area to Civilian Personnel Office, Office of Research and Liaison, ACIC, 25th and Oklahoma Avenue, N.E., Washington, D.C.

Are we neglecting to develop and/or use techniques for teaching geography and for teaching students to think geographically?

In cooperation with the Nebraska Academy of Sciences and in recognition of the Nebraska Centennial, the Nebraska Chapter of the National Council of Geography Teachers sponsored a field trip in Omaha and vicinity on April 24. The group met at 8:30. After being served coffee and donuts by the University, a short briefing session was held. The 45 participants left the University of Omaha at 9:40 A.M. by bus and automobiles for the field trip. Stopping points had been arranged with a speaker at each point. The following places of geographical interest were visited: Mormon Cemetery, Mormon Bridge, Omaha Public Power District Power Plant, Carter Lake, Omaha Municipal Airport and Weather Bureau, Union Station, Bellevue (first white settlement in Nebraska), Omaha Union Stockyards, and Joslyn Memorial Art Museum.

In addition, other parts of the industrial district and the chief residential area of Omaha were visited.

The speakers included the following geographers: Fred Dale of Wayne State College, A. B. Clayburn of Peru State Teachers College and Leslie Hewes of the University of Nebraska.

Professor Don Nelson of the University of Omaha was responsible for local arrangement and the president, Professor Hewes, was in charge of the meeting and trip.

A business meeting was held at the Airport Hayden House immediately following lunch. The following officers were elected for the coming year:

Mr. Fred Dale, Wayne State College, Wayne, President; Mr. Kermit M. Laidig, Columbus, Vice-president; Mrs. Arlene Mae Korinek, Wilber, Secretary-Treasurer; and Mrs. Olga Steele and Miss Irma Warta, University of Nebraska, Lincoln, Co-editors of the *Bulletin*.

Teachers will be happy to hear that the Eleventh Annual Edition of the *Elementary Teachers Guide to Free Curriculum Materials* is now available. The new *Guide* can be secured from Educators Progress Service, Randolph, Wisconsin.

Have you previewed *Winter is an Adventure* produced for the primary and intermediate levels and published by Coronet Films, 65 E. South Water Street, Chicago 1, Illinois?

Dr. John Kirtland Wright, geographer-historian, has been awarded the Charles P. Daly Medal by the American Geographical Society. The medal was presented to Dr. Wright for his outstanding contributions to the field of geography thru his administrative services, writing and research. "In making this award," Dr. Charles B. Hitchcock, director, said, "the society wishes to express its appreciation of Dr. Wright's continued and able efforts in furthering the aims of the society, and its recognition of his distinguished contributions to the field of geography as a whole." Dr. Wright is a research associate of the American Geographical Society.

The late President Getúlio Vargas, on August 12, dedicated the new $16,800,000 Mannesmann steel plant in Belo Horizonte which will soon be adding another 100,000 tons annually to Brazil's rapidly expanding steel output. Seamless pipe will be the principal output at the plant.

According to Thomas C. Oftelie of Aero Service Corporation, Philadelphia, where a certain tree grew, gave geologists exploring the rich iron deposits of Venezuela their clue as to the extent of the ore. A variety of the copei tree that grows only on soil produced by iron ore has a distinctive texture on aerial photographs, which can be used to guide scientists and engineers to underground ore bodies from photographs of the region.

William Morris Davis, the teacher-geologist who first described the geographical cycle, was also a brilliant field researcher, according to the evidence of his most famous book, "Geographical Essays" which Dover Publications, Inc., 1780 Broadway, New York 19, has reissued in an unabridged edition at $5.50.

The C. S. Hammond Company, Maplewood, New Jersey, in releasing information about its new atlas, *Hammond's Ambassador World Atlas,* calls our attention to two quotations which the geographer should have in his handy book. One is by Rudyard Kipling who wrote, "I do not assert that it is impossible to hold intelligent conversation without the help of an atlas. But I do say that as soon as men begin to talk about anything interesting that really matters, someone has to get an atlas." The other is by Jonathon Swift, who wrote the following verse:

"So geographers, in Afric maps,
With savage pictures fill their gaps,
And o'er unhabitable downs
Place elephants for want of towns."